

# *Journal of*

*Published under the Auspices of the Society for Invertebrate Pathology*

Volume 26, 1975

*Editor-in-Chief*

THOMAS C. CHENG

*Editorial Board:*

MARION A. BROOKS

LEE A. BULLA, JR.

ELIZABETH U. CANNING

JUNE STEPHENS CHADWICK

PETER FAULKNER

PIERRE FERRON

K. A. HARRAP

R. P. JAKES

J. F. LONGWORTH

DONALD W. ROBERTS

HAROLD W. ROSSMOORE

CHARLES S. RICHARDS

HENRYK SANDNER

CARL J. SINDERMAN

GORDON R. STAIRS

MAX D. SUMMERS

T. W. TINSLEY

MARENE R. TRIPP

JAMES L. VAUGHN

S. BRADLEIGH VINSON

H. WATANABE

*Founding Editor:* EDWARD A. STEINHAUS

**ACADEMIC PRESS**  
NEW YORK and LONDON

Copyright © 1975 by Academic Press, Inc.  
All rights reserved

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the copyright owner.

# CONTENTS OF VOLUME 26

NUMBER 1, JULY 1975

JERRY L. FOWLER AND ELDON REEVES. Microsporidan Spore Structure As Revealed by Scanning Electron Microscopy .....	1
V. D. MILOSERDOVA AND E. M. SUKHORADA. In Vitro Cultivation of Testicular Cysts of the Greater Wax Moth and Multiplication of the Associated Nuclear Polyhedrosis Virus .....	7
FREDRICK C. COLLEY, LIE KIAN JOE, VIQAR ZAMAN, AND E. U. CANNING. Light and Electron Microscopical Study of <i>Nosema eurytremae</i> .....	11
B. A. FEDERICI AND D. W. ROBERTS. Experimental Laboratory Infection of Mosquito Larvae with Fungi of the Genus <i>Coelomomyces</i> . 1. Experiments with <i>Coelomomyces psorophorae</i> var. in <i>Aedes taeniorhynchus</i> and <i>Coelomomyces psorophorae</i> var. in <i>Culiseta inornata</i> .....	21
GARY G. NEWMAN AND G. R. CARNER. Factors Affecting the Spore Form of <i>Entomophthora gammae</i> .....	29
E. G. KING, J. V. BELL, AND D. F. MARTIN. Control of the Bacterium <i>Serratia marcescens</i> in an Insect Host-Parasite Rearing Program .....	35
W. S. FISHER, E. H. NILSON, AND R. A. SHLESER. Effect of the Fungus <i>Haliphthoros milfordensis</i> on the Juvenile Stages of the American Lobster <i>Homarus americanus</i> .....	41
FUMIHIKO KAWAMOTO AND TETSU ASAYAMA. Studies on the Arrangement Patterns of Nucleocapsids Within the Envelopes of Nuclear-Polyhedrosis Virus in the Fat-Body Cells of the Brown Tail Moth, <i>Euproctis similis</i> .....	47
R. R. GAUGLER AND W. M. BROOKS. Sublethal Effects of Infection by <i>Nosema heliothidis</i> in the Corn Earworm, <i>Heliothis zea</i> .....	57
BARRY M. BRENNAN AND THOMAS C. CHENG. Resistance of <i>Moniliiformis dubius</i> to the Defense Reactions of the American Cockroach, <i>Periplaneta americana</i> .....	65
CARLOS MERY AND HOWARD T. DULMAGE. Transmission, Diagnosis, and Control of Cytoplasmic Polyhedrosis Virus in Colonies of <i>Heliothis virescens</i> .....	75
THOMAS C. CHENG. <i>Echinocephalus crassostreai</i> sp. nov., A Larval Nematode from the Oyster <i>Crassostrea gigas</i> in the Orient .....	81
CYRIL H. S. THONG AND JOHN M. WEBSTER. Effects of <i>Contortylenchus reversus</i> (Nematoda: Sphaerulariidae) on Hemolymph Composition and Oocyte Development in the Beetle <i>Dendroctonus pseudotsugae</i> (Coleoptera: Scolytidae) .....	91
Y. TANADA, ROBERTA T. HESS, AND ESTHER M. OMI. Invasion of a Nuclear Polyhedrosis Virus in Midgut of the Armyworm, <i>Pseudaletia unipuncta</i> , and the Enhancement of a Synergistic Enzyme .....	99
GRETA E. TYSON. Phagocytosis and Digestion of Spirochetes by Amebocytes of Infected Brine Shrimp .....	105



THOMAS C. CHENG. A Structural and Histochemical Study of the Reaction Complex in <i>Crassostrea gigas</i> (Mollusca) to <i>Echinocephalus crassostreai</i> (Nematoda) .....	113
---	-----

## NOTES

L. L. KEELEY AND S. B. VINSON. $\beta$ -Ecdysone Effects on the Development of Nucleopolyhedrosis in <i>Heliothis</i> Spp. ....	121
G. BENZ AND A. ALTWEGG. Safety of <i>Bacillus thuringiensis</i> for Earthworms ..	125
PETER NEAL D'ELISCU. Crustecdysone Initiated Metamorphosis of the Peritrichous Ciliate <i>Cothurnia variabilis</i> , a Commensal on the Gills of the Crayfish <i>Pacifastacus gambelii</i> .....	127
JAMES V. BELL. Production and Pathogenicity of the Fungus <i>Spicaria rileyi</i> from Solid and Liquid Media .....	129
G. L. NORDIN. A Nuclear Polyhedrosis Virus from the Silverspotted Skipper, <i>Epargyreus clarus</i> (Lepidoptera: Hesperiiidae) .....	131
WAI NAM TO, ROBERT T. GUDAUSKAS, AND JAMES D. HARPER. Pathogenicity of <i>Bacillus cereus</i> Isolated from <i>Trichoplusia ni</i> Larvae .....	135
WILLIAM L. KRINSKY. Cystic Anomaly in the Intestine of Adult Tabanidae .....	137
H. L. MORTON, J. O. MOFFETT, AND F. D. STEWART. Effect of Alfalfa Looper Nuclear Polyhedrosis Virus on Honeybees .....	139
PHYLLIS T. JOHNSON AND JOEL E. BODAMMER. A Disease of the Blue Crab, <i>Callinectes sapidus</i> , of Possible Viral Etiology .....	141
B. RACCAH, VENEZIA MELAMED-MADJAR AND J. COHEN. A Granulosis Virus from <i>Sesamia nonagrioides</i> .....	145

## NUMBER 2, SEPTEMBER 1975

G. H. TAKEI AND M. TAMASHIRO. Changes Observed in Hemolymph Proteins of the Lawn Armyworm, <i>Spodoptera Mauritii acronyctoides</i> , During Growth, Development, and Exposures to a Nuclear Polyhedrosis Virus .....	147
J. VAŇKOVÁ, E. VOBRÁZKOVÁ, AND K. SAMŠIŇÁK. The Control of <i>Monomorium pharaonis</i> (Hymenoptera: Formicidae) with <i>Bacillus thuringiensis</i> .....	159
BABAJIDE A. MATANMI AND JOHN L. LIBBY. Scanning Electron Microscopy of <i>Entomophthora virulenta</i> and <i>Conidiobolus coronatus</i> (Entomophthorales: Entomophthoraceae) .....	165
ILENE GIPSON AND HOWARD A. SCOTT. An Electron Microscope Study of Effects of Various Fixatives and Thin-Section Enzyme Treatments on a Nuclear Polyhedrosis Virus .....	171
ROBERTA T. HESS, GERALD S. BENHAM, JR. AND GEORGE O. POINAR, JR., The Ultrastructure of Microorganisms in the Tissues of <i>Casimira infesta</i> (Hymenoptera: Ichneumonidae) .....	181

O. N. MORRIS. Susceptibility of the Spruce Budworm, <i>Choristoneura fumiferana</i> , and the White-Marked Tussock Moth, <i>Orgyia leucostigmata</i> , to <i>Bacillus thuringiensis</i> : Chemical Insecticide Combinations .....	193
O. N. MORRIS. Effect of Some Chemical Insecticides on the Germination and Replication of Commercial <i>Bacillus thuringiensis</i> .....	199
S. R. WEBB, J. D. PASCHKE, G. W. WAGNER AND W. R. CAMPBELL. Bioassay of Mosquito Iridescent Virus of <i>Aedes taeniorhynchus</i> in Cell Cultures of <i>Aedes aegypti</i> .....	205
ROBIN M. OVERSTREET. Buquinolate as a Preventive Drug to Control Microsporidiosis in the Blue Crab .....	213
NORMAN A. RATCLIFFE. Spherule Cell-Test Particle Interactions in Monolayer Cultures of <i>Pieris brassicae</i> Hemocytes .....	217
NORMAN A. RATCLIFFE AND ANDREW F. ROWLEY. Cellular Defense Reactions of Insect Hemocytes In Vitro: Phagocytosis in a New Suspension Culture System. ....	225
CYRIL H. S. THONG AND JOHN M. WEBSTER. Effects of the Bark Beetle Nematode, <i>Contortylenchus reversus</i> , on Gallery Construction, Fecundity, and Egg Viability of the Douglas Fir Beetle, <i>Dendroctonus pseudotsugae</i> (Coleoptera: Scolytidae). ....	235
D. K. REED, H. TASHIRO, AND J. B. BEAVERS. Determination of Mode of Transmission of the Citrus Red Mite Virus .....	239
WM. H. MCGAUGHEY. Compatibility of <i>Bacillus thuringiensis</i> and Granulosis Virus Treatments of Stored Grain with Four Grain Fumigants .....	247
MARTHA BROWN AND P. FAULKNER. Factors Affecting the Yield of Virus in a Cloned Cell Line of <i>Trichoplusia ni</i> Infected with a Nuclear Polyhedrosis Virus .....	251

## NOTES

A. CARILLI AND G. PACIONI. Occurrence of an Entomogenous Fungus on Odonata. ....	259
PAUL F. BASCH AND JOSEPH J. DiCONZA. <i>Cotylurus lutzi</i> (Strigeidae): Pre- and Postadult Stages Cultured in Vitro. ....	263
KENNETH R. SCHRANKEL AND FRITZ E. SCHWALM. Viruslike Particles in Spermatids of <i>Coelopa frigida</i> (Diptera) .....	265
DONALD W. HALL, THEODORE G. ANDREADIS, THOMAS R. FLANAGAN, AND WALTER J. KACZOR. Melanotic Encapsulation of the Nematode, <i>Neoaplectana carpocapsae</i> by <i>Aedes aegypti</i> Larvae Concurrently Parasitized by the Nematode <i>Reesimermis nielsenii</i> . ....	269
A. J. DABEK AND R. T. PLUMB. Viruslike Particles in the Taro Planthopper, <i>Tarophagus proserpina</i> . ....	271



IN MEMORIAM. James William MacBain Cameron. ....	273
J. JAROSZ. Lysozymelike Lytic Enzyme of <i>Streptococcus faecalis</i> and its Role in the Larval Development of Wax Moth, <i>Galleria mellonella</i> . ....	275
SAMUEL F. TUTT AND WILLIAM T. WILSON. The Effects of <i>Penicillium waksmani</i> Growth on American Foulbrood Infected Combs and Adults Honeybee Activity. ....	283
MICHAEL C. MIX. Proliferative Characteristics of Atypical Cells in Native Oysters ( <i>Ostrea lurida</i> ) from Yaquina Bay, Oregon. ....	289
G. R. F. DAVIS, J. D. SMITH B. SCHIEFER, AND F. M. LOEW. Screening for Mycotoxins with Larvae of <i>Tenebrio molitor</i> . ....	299
THOMAS E. RINDERER AND WALTER C. ROTHENBUHLER. The Fate and Effect of Hairs Removed from Honeybees with Hairless-Black Syndrome. ....	305
S. Y. YOUNG, W. C. YEARIAN, AND H. A. SCOTT. Detection of Nuclear Polyhedrosis Virus Infection in <i>Heliothis</i> spp. by Agar Gel Double Diffusion. ....	309
ROBERT R. GRANADOS AND DOROTHY J. MEEHAN. Pathogenicity of the Corn Stunt Agent to an Insect Vector, <i>Dalbulus elimatus</i> . ....	313
DONALD J. WITT AND GORDON R. STAIRS. The Effects of Ultraviolet Irradiation on a Baculovirus Infecting <i>Galleria mellonella</i> ....	321
HARRY K. KAYA. Persistence of Spores of <i>Pleistophora schubergi</i> (Cnidospora: Microsporida) in the Field, and Their Application in Microbial Control ....	329
R. MANKAU. <i>Bacillus penetrans</i> n. comb. Causing a Virulent Disease of Plant-Parasitic Nematodes. ....	333
THOMAS C. CHENG AND DAVID A. FOLEY. Hemolymph Cells of the Bivalve Mollusc <i>Mercenaria mercenaria</i> : An Electron Microscopical Study. ....	341
LARS NYHLEN AND TORGNY UNESTAM. Ultrastructure of the Penetration of the Crayfish Integument by the Fungal Parasite, <i>Aphanomyces astaci</i> , Oomycetes. ....	353
KEVIN R. HARRIS AND THOMAS C. CHENG. The Encapsulation Process in <i>Biomphalaria glabrata</i> Experimentally Infected with the Metastrongylid <i>Angiostrongylus cantonensis</i> : Enzyme Histochemistry. ....	367
GEORGE O. POINAR, JR. AND ARMAND M. KURIS. Juvenile <i>Ascarophis</i> (Spirurida: Nematoda) Parasitizing Intertidal Decapod Crustacea in California: with Notes on Prevalence and Effects on Host Growth and Survival. ....	375
MARTHA GILLIAM AND ROBERT J. ARGAUER. Stability of Oxytetracycline in Diets Fed to Honeybee Colonies for Disease Control. ....	383
A. J. NAPPI AND T. M. HAMMILL. Viral Release and Membrane Acquisition by Budding through the Nuclear Envelope of Hemocytes of the Gypsy Moth, <i>Porthetria dispar</i> . ....	387

## NOTES

ALBRECHT GRÖNER. Production of Resting Spores of <i>Entomophthora thaxteriana</i> . .....	393
THOMAS C. CHENG. New Geographic Records for <i>Tylocephalum</i> Metacestodes. ....	395
D. K. HUNTER, D. F. HOFFMANN, AND S. J. COLLIER. Observations on a Granulosis Virus of the Potato Tuberworm, <i>Phthorimaea operculella</i> . ....	397
W. A. SMIRNOFF. Histological Studies on the Development of the Microsporidian <i>Thelohania pristiphorae</i> in Larvae of <i>Malacosoma disstria</i> and <i>Malacosoma americanum</i> . ....	401
MARY A. WELTON AND DAVID TYRRELL. A Note on the Isolation of <i>Entomophthora</i> Species on Artificial Media. ....	405
A. J. NAPPI. Induction of Melanotic Tumors in Larvae of <i>Drosophila affinis</i> Parasitized by the Wasp, <i>Pseudeucoila bochei</i> . ....	407
JAROSLAV WEISER AND JOSEF ŘEHÁČEK. <i>Nosema slovacae</i> sp. n.: A Second Microsporidian of the Tick <i>Ixodes ricinus</i> . ....	411
C. M. MERRITT, G. M. THOMAS, AND J. CHRISTENSEN. A Natural Epizootic of a Coccidian in a Population of the Egyptian Alfalfa Weevil, <i>Hypera brunneipennis</i> , and the Alfalfa Weevil, <i>H. postica</i> . ....	413
TRUMAN B. CLARK AND JAMES J. O'GRADY. Nonoccluded Viruslike Particles in Larvae of <i>Culicoides cavaticus</i> (Diptera: Ceratopogonidae). ....	415
H. D. BURGESS. Teratogenicity of the Thermostable Beta Exotoxin of <i>Bacillus thuringiensis</i> in <i>Galleria mellonella</i> . ....	419
THOMAS C. CHENG. Does Copper Cause Anemia in <i>Biomphalaria glabrata</i> ? ....	421

## BOOK REVIEWS

T. C. CHENG. Molluscicides in Schistosomiasis Control. Reviewed by F. ETGES .....	423
M. R. N. SHEPHARD. Arthropods as Final Hosts of Nematodes and Nematomorphs. An Annotated Bibliography 1900-1972. Reviewed by THOMAS C. CHENG .....	424
KURT KREIG. Invertebraten in der Geschwulstforschung (Invertebrates in Tumor Research). Reviewed by HANS E. KAISER .....	424
EMILE A. MALEK AND THOMAS C. CHENG. Medical and Economic Malacology. Reviewed by GEORGE P. HOSKIN. ....	425
AUTHOR INDEX .....	427
CUMULATIVE SUBJECT INDEX (Volumes 25-26) .....	429



